

The current issue of the COSMO Newsletter contains five contributions that cover some aspects of the R&D efforts undertaken in the Consortium for Small-Scale Modelling. All contributors to the COSMO Newsletter No. 17 are gratefully acknowledged. Extensive discussions of the various COSMO issues (including recent achievements, pressing problems, future challenges, and management) took place during the 18th COSMO General Meeting held 5-8 September 2016 in Offenbach, Germany. Details can be found at the COSMO web page <http://www.cosmo-model.org/content/consortium/generalMeetings/general2016/default.htm>

One recent event should be particularly mentioned. In 2017, COSMO wholeheartedly welcomed a new member, namely, the Israel Meteorological Service (IMS). The IMS colleagues are already making important contributions to a number of COSMO projects, and I am sure will further strengthen their role in COSMO in the future.

Guided by the COSMO Strategy and the COSMO Science Plan, the Consortium strives to improve the weather forecast and to maintain high satisfaction of its numerous customers. Much effort nowadays goes into the convection-permitting scales and the ensemble prediction systems. Mention should be made of the recently completed COSMO Priority Project KENDA that resulted in the development and implementation of the novel ensemble data assimilation system based on the Local Ensemble Transform Kalman Filter (LETKF). The LETKF-based data assimilation system (KENDA) became operational at DWD in March 2017 (for both ensemble and deterministic forecasts) and at ARPAE in May 2017 (for deterministic forecast only). Recall that MCH has been running KENDA operationally since May 2016 (for ensemble forecast). Other Consortium members are expected to consider the operational use of KENDA in the not too distant future. Within the framework of the COSMO working groups, priority projects and priority tasks, the COSMO scientists deal with a number of pressing problems that are high on the agenda of the NWP centres. These include development of dynamical cores with improved conservation properties; more intimate coupling of turbulence, micro-physics, radiation and soil (including ocean and lakes) parameterization schemes; development and efficient use of spatial verification methods for ensemble and deterministic forecasts; representation of model uncertainties and development of perturbation methods for the ensemble prediction systems; development of objective and efficient methods of calibration of NWP models; and performance on the massively parallel (e.g. GPU-based) computer architectures. COSMO also pays much attention to the COSMO software maintenance and to comprehensive testing and timely release of new model versions. The release notes are found at the COSMO web page, <http://www.cosmo-model.org>. Last but not the least, the unification of (parts of) the codes of the NWP models COSMO and ICON looms large on the COSMO agenda, and much effort is made along this line. Considerable progress has been made in the development of common COSMO-ICON library of physical parameterization schemes. More information about the COSMO activities can be found at the COSMO web page.

COSMO currently faces a number of strong challenges. One well-known and very challenging issue is related to the resolution at which convection is (arguably) permitted but not yet resolved. Apart from this issue that calls for significant research effort, the Consortium urgently needs to solve some problems of both R&D and management character. These include the future of the COSMO Working Group 4 "Interpretation and Applications" that is fairly uncertain at the time being, and further development and restructuring of the Meteorological Test Suite that is crucial for timely release of new COSMO-model versions. The above and many other issues will be discussed at the next COSMO General Meeting to be held in Jerusalem, Israel, 11-14 September 2017.

Enjoy your work in COSMO and the COSMO spirit!

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Figure 1: Participants of the 16th COSMO General Meeting in Offenbach